



blueprism®

SECTION 6

ACTIVITY SHEET

FOUNDATION TRAINING GUIDE

Suitable for Blue Prism version 6.2 or greater



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Blue Prism Limited, 2 Cinnamon Park, Birchwood, WA2 0XP, United Kingdom
Registered in England: Reg. No. 4260035. Tel: +44 870 879 3000. Web: www.blueprism.com

Section 6 Activity Sheet

In Section 6, you will learn how to create a Business Object and how to interact with, control and utilize the functionality of applications on your computer, using Application Modeller.

You will also learn about new Stages in the Object Studio toolbar, to enable successful interactions between Blue Prism and other applications. Including how to use Input and Output Parameters to access secure applications with username and password credentials.

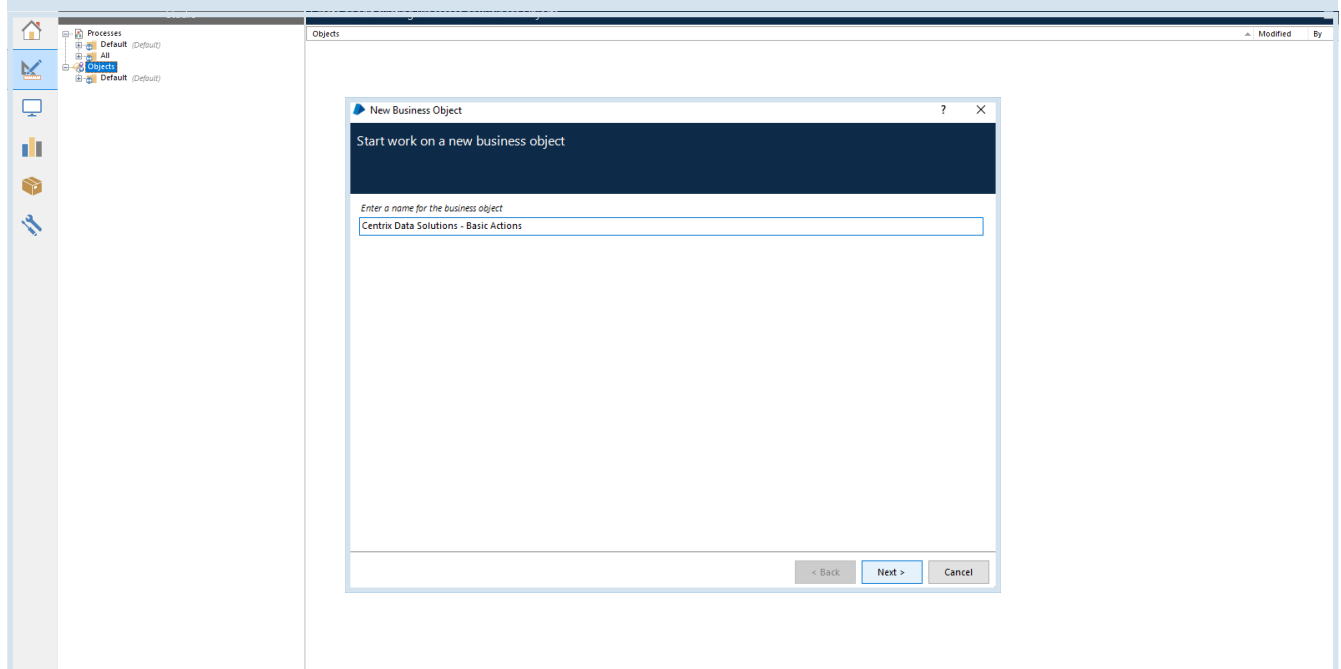
Finally, you will learn best practice methodology for constructing Object Layers, using Multi-Object design that is suitable for Blue Prism Solutions in a live operational environment.

SECTION 6 ACTIVITY 1

Video 6.1

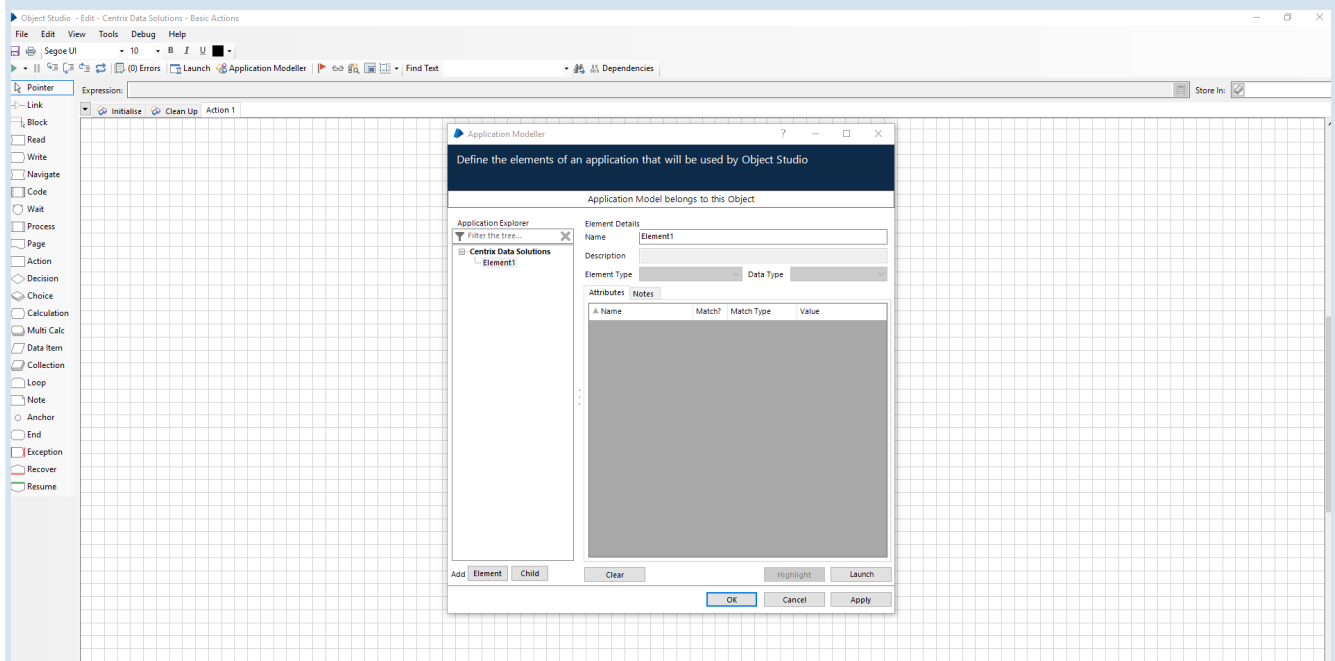
Create a New Business Object.

- In the Studio Area, *right-click* on *Objects* and select *Create Object*.
- Give the new Business Object a name that includes the name of the application, appended with a short description of the function or purpose – *Centrix Data Solutions – Basic Actions*.
- Open the new Business Object by *double-clicking* on the title.
- For this activity, you will be working in the *Action 1* Page of the Business Object.



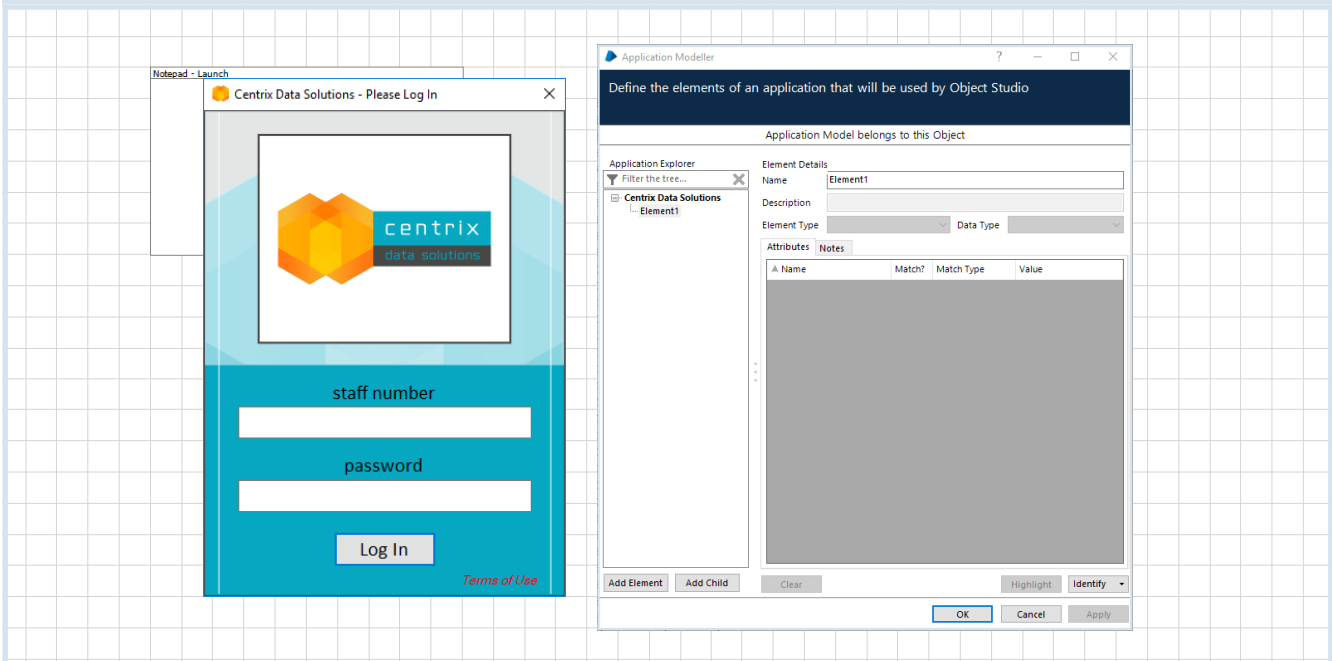
Perform the initial set up of the application, using the Application Modeller Wizard.

- Click the *Application Modeller* button in the toolbar at the top of the workspace.
- The first time you open Application Modeller, a dialog box will appear asking for initial set up details. Select *Define a new Application Model* and provide the application name *Centrix Data Solutions*.
- Select *Windows Application*.
- Select *My application is launched from an executable file*.
- Click the *Browse* button and navigate to the folder that contains the *Centrix Data Solutions* application. *C:\BluePrism\Training\Applications\Windows\CentrixDataSolutions.exe*
- Progress through the remaining steps, accepting the default options.
- Once set up is complete, you will see the Application Modeller window.



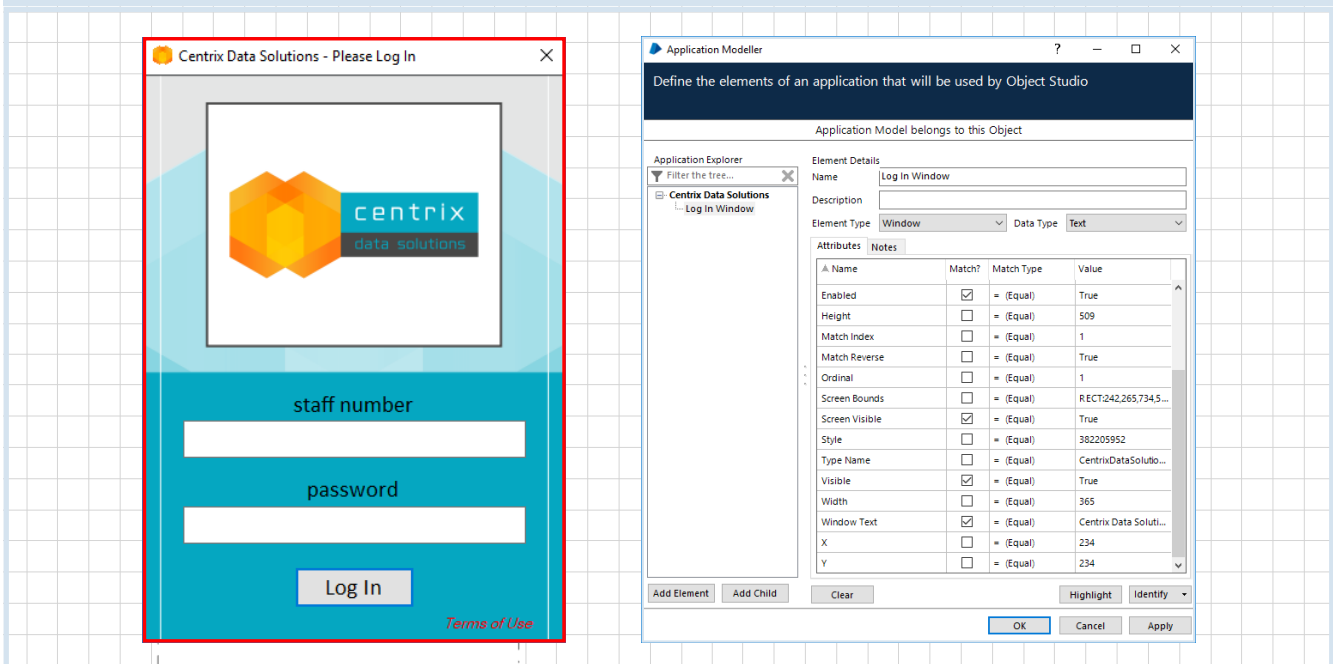
Launch the *Centrix Data Solutions* application and enter Spy Mode.

- Click the *Launch* button and wait for the *Log In* window of the application to appear.
- Select *Element 1* in the Element tree, then click *Identify* - you are now in Spy Mode.
- Move your cursor over the different areas of the *Centrix Data Solutions* application window. Each area should become highlighted by a red box as you move over them. This is Application Modeller exploring the structure of the application window.
- To cancel Spy Mode, hold *CTRL* and *right-click*.



Use Spy Mode to identify and capture an Element - the *Log In* window of the application. Create the unique Attributes so that it can be used by an Action.

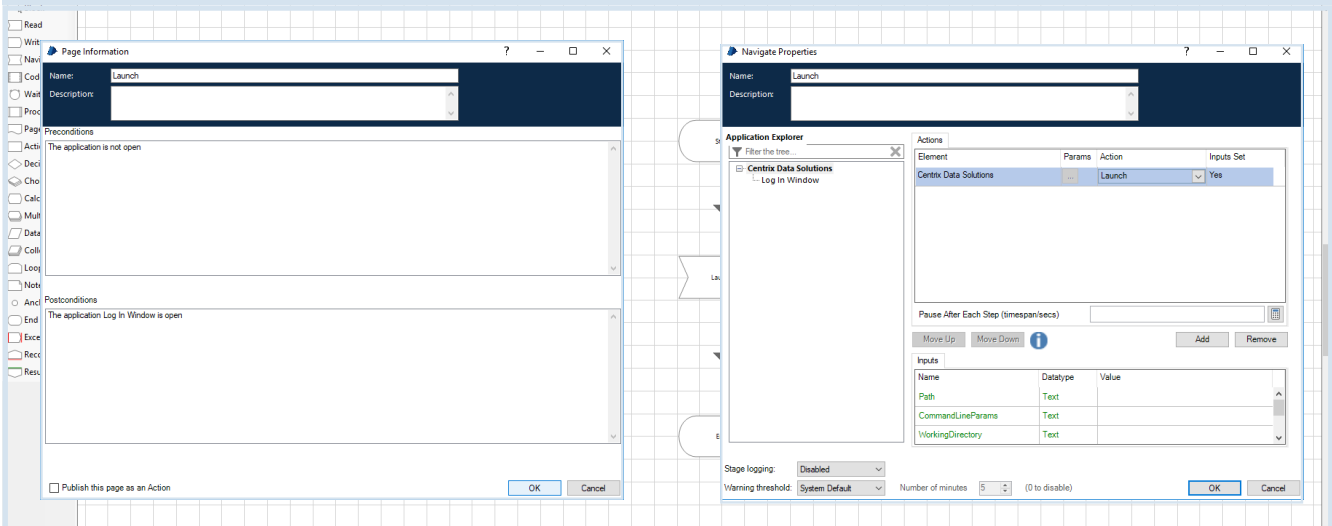
- Enter Spy Mode and move your cursor over the *Centrix Data Solutions Log In* window, until the highlight box is around the whole window.
- Then hold *CTRL* and *left-click*.
- You should now see that the Element Details Area of Application Modeller has been populated with information and the Attributes that are specific to that Element.
- Click the *Highlight* button to instruct Application Modeller to find the Element and check it has been uniquely identified - the red highlight box should appear around the whole *Log In* window.
- Rename the Element to reflect the area of the user interface that it is defining - *Log In Window*.
- Click *OK* and save the *Centrix Data Solutions – Basic Actions* Business Object.

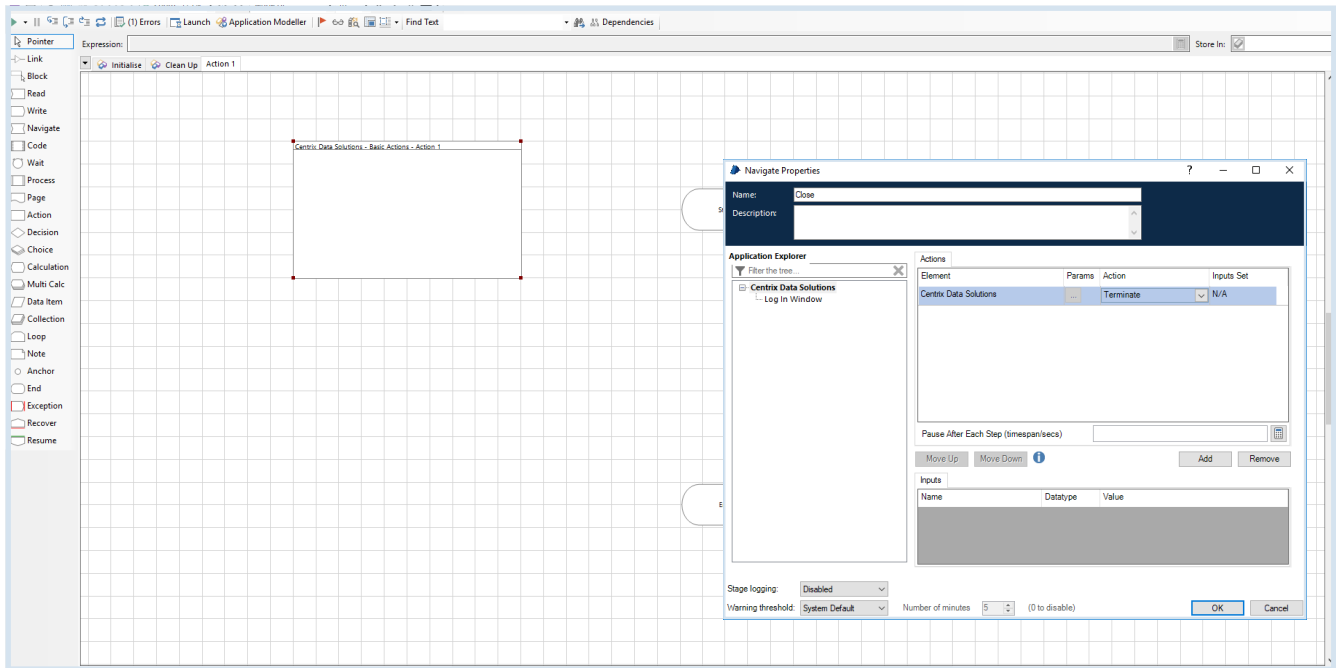


In this activity, you will use a Navigate Stage so that the Action within the Business Object, can be used to launch the *Centrix Data Solutions* application. You will then create an Action to close the application.

Add Navigate Stages to launch and close the application.

- For this activity, you'll be working in the *Centrix Data Solutions - Basic Actions* Business Object.
- Navigate to the *Action 1* Page and *double-click* on the Page Information window. Rename the *Action 1* tab to communicate its purpose – *Launch*.
- Provide a description of the Preconditions and Postconditions:
 - Preconditions should describe the state of the application prior to running the Action.
 - Postconditions should describe the state of the application once the Action has run (e.g. the application *Log In* window is open on screen).
- Add a Navigate Stage to the *Launch* Action Diagram and link it to the Start and End Stages.
- Open the Navigate Stage properties window and rename it *Launch*.
- *Drag* the top application Element *Centrix Data Solutions* into the Element Column in the available row in the Actions Area of the window.
- Select *Launch* from the Action drop-down menu.
- Close the properties window and the *Log In* window of the application.
- Save, reset and run the *Launch* Action Page.
- Create a new Action Page called *Close* and follow the same procedure as above, but this time set the Action to *Terminate* the application.





SECTION 6 ACTIVITY 3a

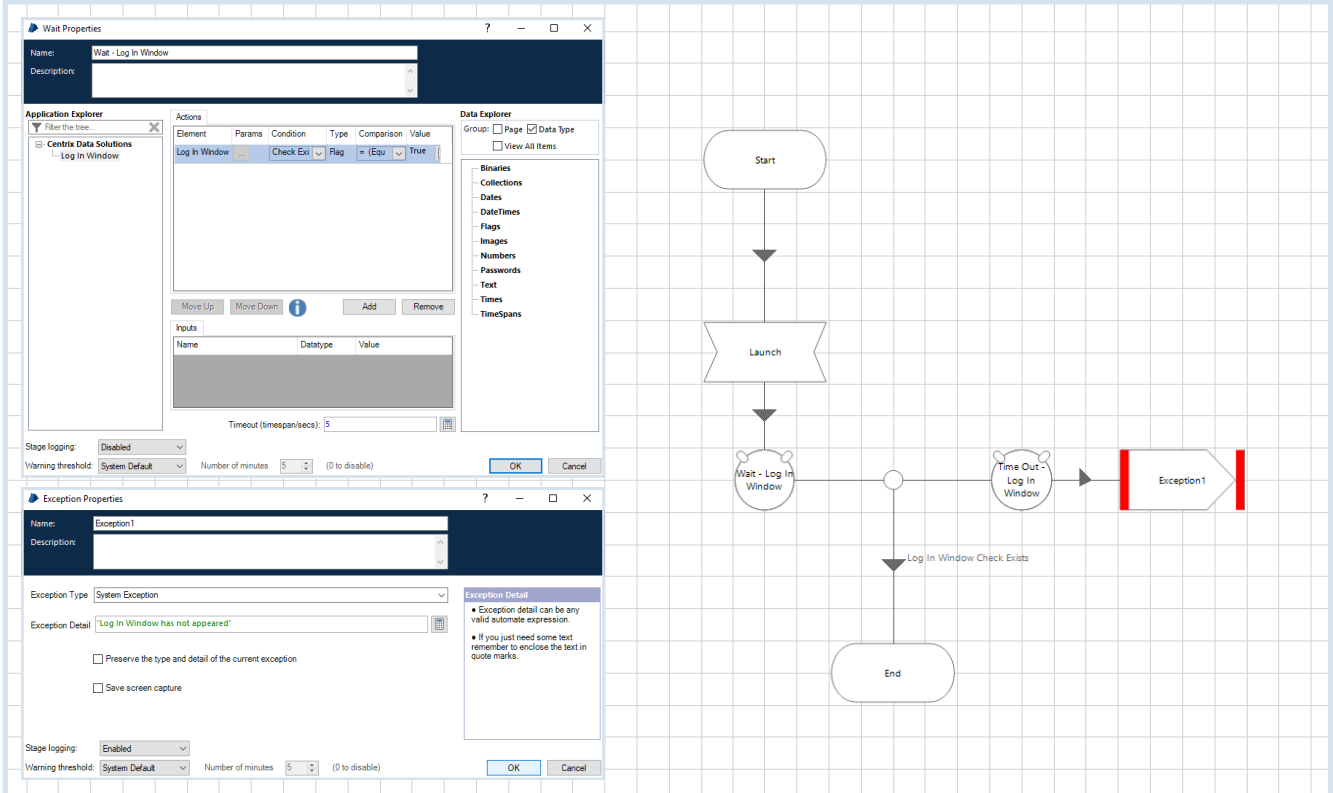
Video 6.4

In this activity, you will add a Throttle to the Action Page to slow down the flow through the diagram. You will then create a Global Data Item for the Throttle, which will control the Timeout period for all Throttles used within your business object.

Add a Wait Stage and create a condition to check if the application *Log In* window exists.

- For this activity, you'll be working in the *Centrix Data Solutions - Basic Actions* Business Object.
- Add a Wait Stage to the *Launch* Action Diagram and open the properties window.
- Provide an appropriate name - *Wait Log In Window*.
- Drag the *Log In* window Element from the Elements list, into the Element column of the Actions Area.
- From the Conditions drop-down menu, select *Check Exists* and leave the Comparison and Value fields with their default values *Equals* and *True*.
- Close the Wait Stage properties window.
- Link the *Launch* Navigate Stage to the Wait Stage and link the condition to the End Stage.
- Add an Exception Stage to the right of the Timeout and link the two together.
- Open the Exception Stage properties window.
- Choose *System Exception* for the Exception Type.

- For Exception Detail enter *“Log In Window has not appeared”*.
- Reset and run the *Launch* Action Page.

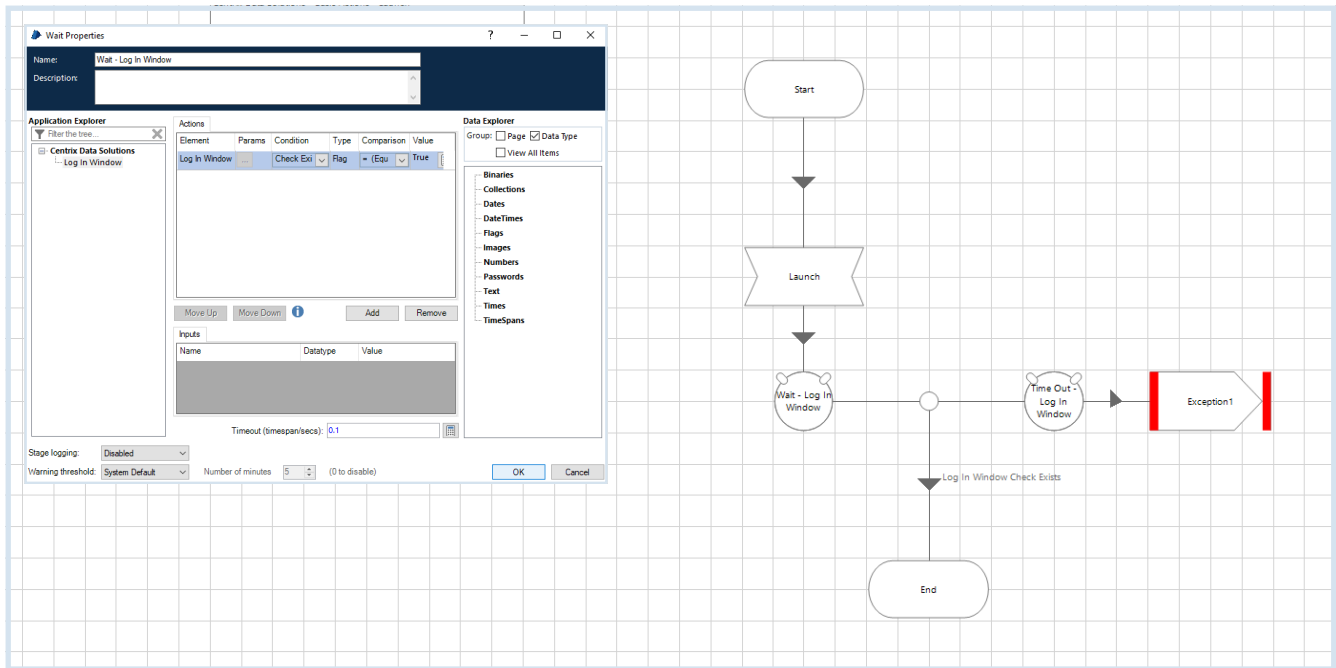


SECTION 6 ACTIVITY 3b

Video 6.4

Experiment with the duration of the Timeout.

- Open the Wait Stage properties.
- Change the duration of the wait time in the Timeout field from 5 to 0.1 and close the properties window.
- Close the *Centrix Data Solutions* application window.
- Click *Reset* then *Go*, to watch the flow progress through the Timeout to the Exception Stage.



SECTION 6 ACTIVITY 4

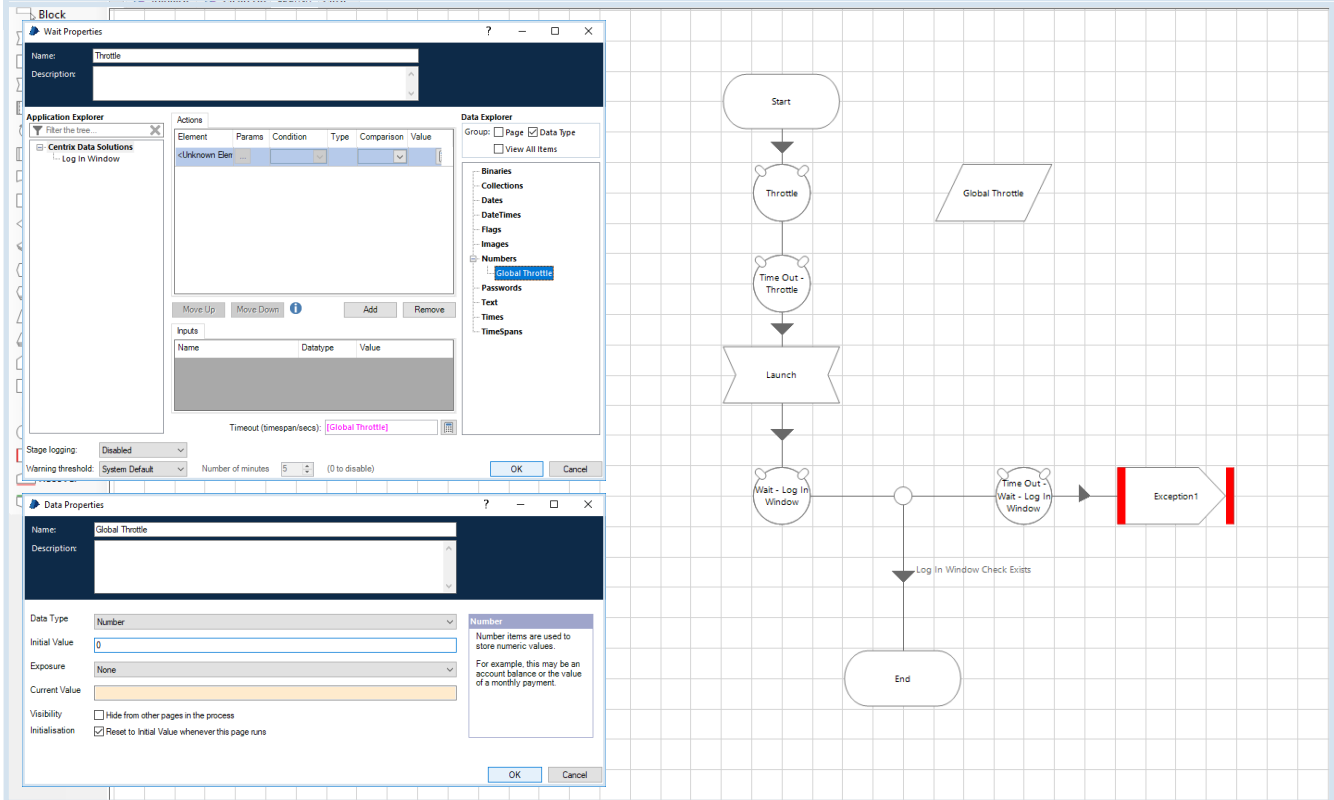
Video 6.5

In this activity, you will apply a Throttle to the Action Page to slow down the flow through the diagram. You will then create a Global Data Item for the Throttle, to control the Timeout period of all of the Actions within the Business Object.

Add a Throttle to the start of the Object Diagram and then create a Global Data Item to set the Throttle duration.

- For this activity you'll be working on *Launch* Action Page of the *Centrix Data Solutions – Basic Actions* Business Object.
- Add a Wait Stage between the Start Stage and the Navigate Stage and link them all together.
- Rename the Wait Stage (*Throttle*) and Timeout Stage (*Timeout - Throttle*) to reflect their purpose and link them to the rest of the diagram - if a condition is not applied, there will be no branching in the diagram.
- In the Wait Stage properties, change the Timeout period to 2 and reset and run the *Launch* Action Page. The Throttle will cause the flow to pause for 2 seconds, before continuing down the diagram.
- Create a Global Data Item for the Throttle, which will control the the duration of the pause for all of the Wait Stages within the Business Object.
- Choose *Number* Data Type with an Initial Value of 5, uncheck the *Hide from other pages in the process* box and give it a name - *Global Throttle*.
- In the Wait Stage properties, replace the Timeout value with the new *Global Throttle* Data Item.

- The value in the Global Throttle Data Item will now determine the duration of the pause within the **Launch** Action Page. The value in this Data Item can be used by any Action Page throughout the Business Object.
- As Throttling is not required with the application currently, go ahead and change the Initial Value of the Throttle Data Item to 0.



SECTION 6 ACTIVITY 5

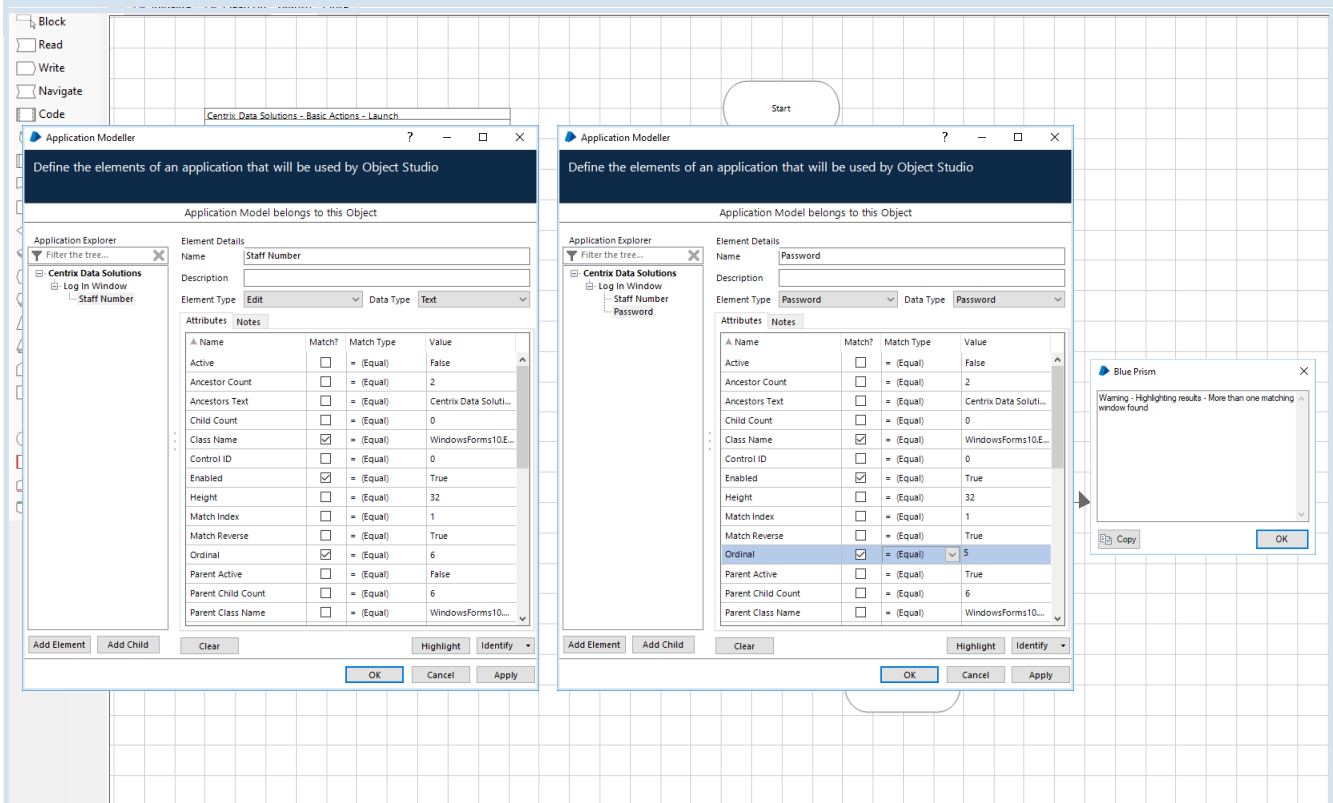
Video 6.6

In this activity, you will identify an Element within an application window, that has an identical fingerprint to a second Element within the same window. You will then use the Ordinal Attribute to distinguish the Unique Attributes for these two Elements.

Distinguish two Elements in Application Modeller, using the Ordinal Attribute.

- For this activity, you'll be working on the **Launch** Page of the *Centrix Data Solutions – Basic Actions* Business Object.
- Open Application Modeller and click **Launch** to launch the *Centrix Data Solutions* application.
- Click **Add Child** and then **Identify** to create a new Element in the Element tree.

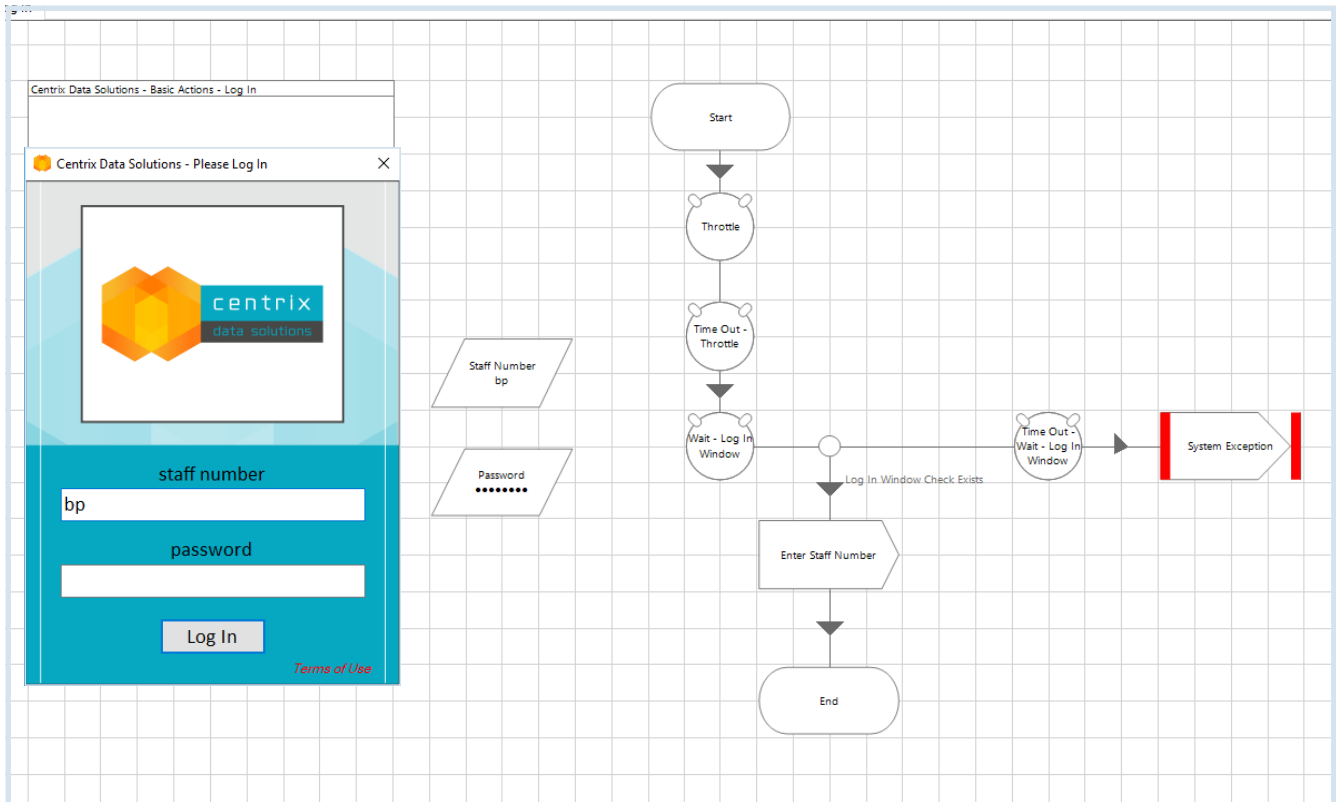
- Spy the *Staff Number* input field in the application *Log In* window.
- Rename the Element to *Staff Number*, then make it a Child of the *Log In* window by dragging it onto the *Log In Window* Element.
- Click the *Highlight* button.
- A warning window will appear, as Application Modeller has found two Elements that cannot be uniquely distinguished. Close the warning window.
- Distinguish the unique Attributes for the two Elements that have been highlighted, by locating the Ordinal Attribute for the *Staff Number* Element and checking the *Match* column.
- Click the *Highlight* button to check that the *Staff Number* field can be uniquely identified.
- Create a new Element for the *Password* input field by clicking *Add Element* and then *Highlight*, to check that the *Password* field can be uniquely identified. The Ordinal Attribute Value for the *Password* Element should now be different to that of the *Staff Number* Element.



In this activity, you will create a *Log In* Action within your Business Object, using two Data Items to hold the *Staff Number* and *Password* values. You will then use a Write Stage to input a value from the *Staff Number* Data Item, into the corresponding input field in the application.

Create a Write Action to enter a value stored within a Data Item into an Element field.

- For this activity, you'll be working in the *Centrix Data Solutions – Basic Actions* Business Object.
- Ensure the *Centrix Data Solutions* application is open and on screen.
- Create a new Action Page and name it *Log In*.
- Add a Throttle to the start of the *Log In* Action Page Diagram, that uses the *Global Throttle* Data Item as the Timeout value. Connect it to the Start Stage.
- Add two Data Items – the first, named *Staff Number* with *Text* Data Type and Initial Value – *bp*.
- And the second, named *Password* with *Password* Data Type and Initial Value – *password*.
- After the Throttle, add a Wait Stage with a condition to check whether the *Log In* window is open and on screen, with a Timeout value of 5. Connect this Wait Stage to the end of the Throttle.
- Add an Exception Stage to the right of the Timeout Stage and link them together.
- Update the Exception Stage properties to record the Exception Type of *System Exception* and Exception Detail "*Log In Window has not appeared*".
- Add a Write Stage after the conditional Wait Stage, to input a value from your Data Item, into the *Staff Number* input field in the *Centrix Data Solutions* application.
- Open the Write Stage properties window.
- Drag the *Staff Number* Data Item into the *Value* column of the Action Area.
- Drag the *Staff Number* Element into the *Element* column of the Action Area.
- Rename the Write Stage to reflect its purpose - *Enter Staff Number*.
- Link all the Stages together.
- Reset and run the *Log In* Action Page to watch the *Staff Number* field populate.



SECTION 6 ACTIVITY 7

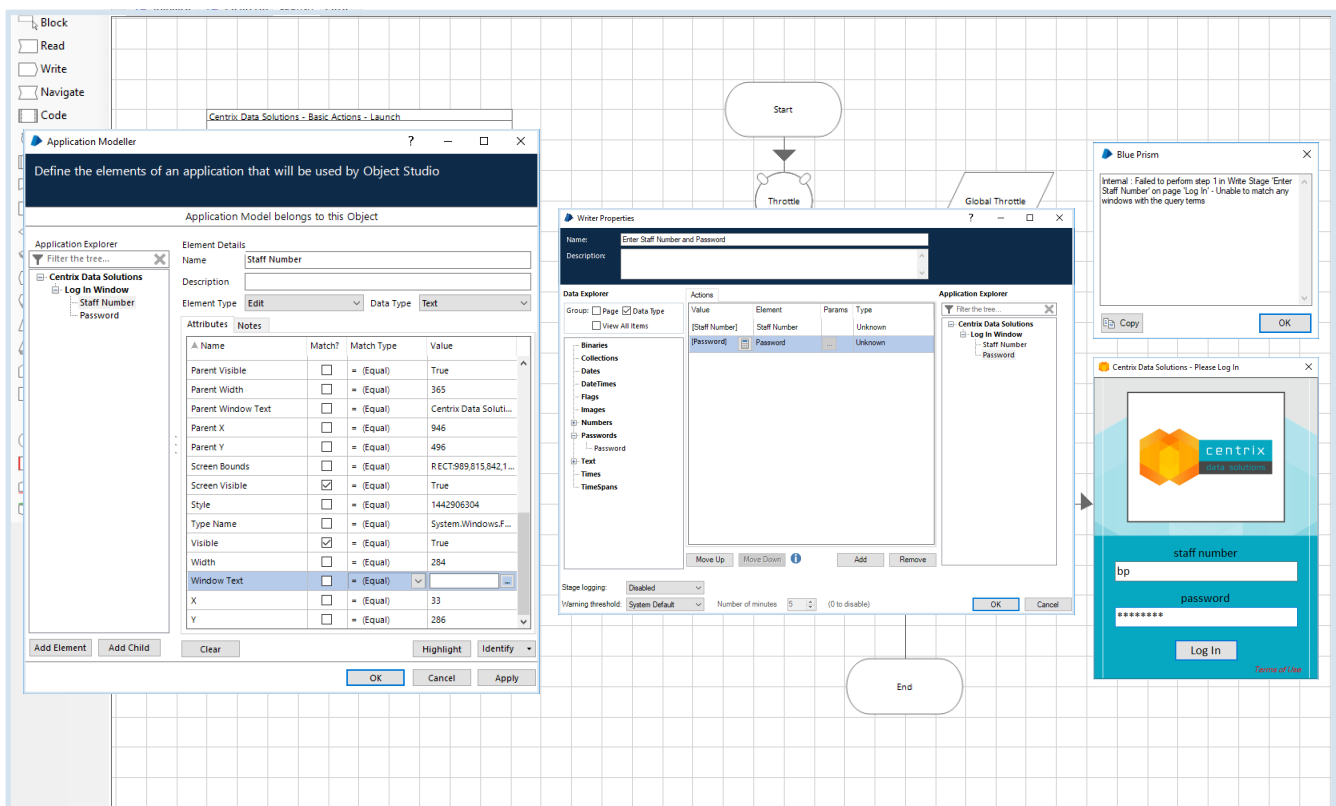
Video 6.8

In this activity, you will induce a deliberate error that prevents the identification of the *Log In* window of the *Centrix Data Solutions* application. Requiring you to locate the Attribute that is producing the error and remove it from the Attributes list. You will then modify the Write Stage to input the Password value into the application.

Edit the Attributes of an Element, so that it can be recognized by Application Modeller regardless of whether the field contains a value.

- For this activity, you'll be working on the *Log In* Action Page of the *Centrix Data Solutions – Basic Actions* Business Object.
- If you have the application open from the previous activity, then the *Staff Number* input field should already have a value in it. If not, then please launch the application and enter a value into the *Staff Number* input field.
- Reset and run the *Log In* Action Page. An error window should appear, which is Application Modeller telling you that it can no longer see the *Staff Number* input field in the application *Log In* window. Close the error window and click *Reset*.
- Open the Application Modeller window and look through the Attributes list. Notice, that the Window Text Attribute is checked and that there is no value associated. As there is now text in the *Staff Number* input field, Application Modeller can no longer recognize it.

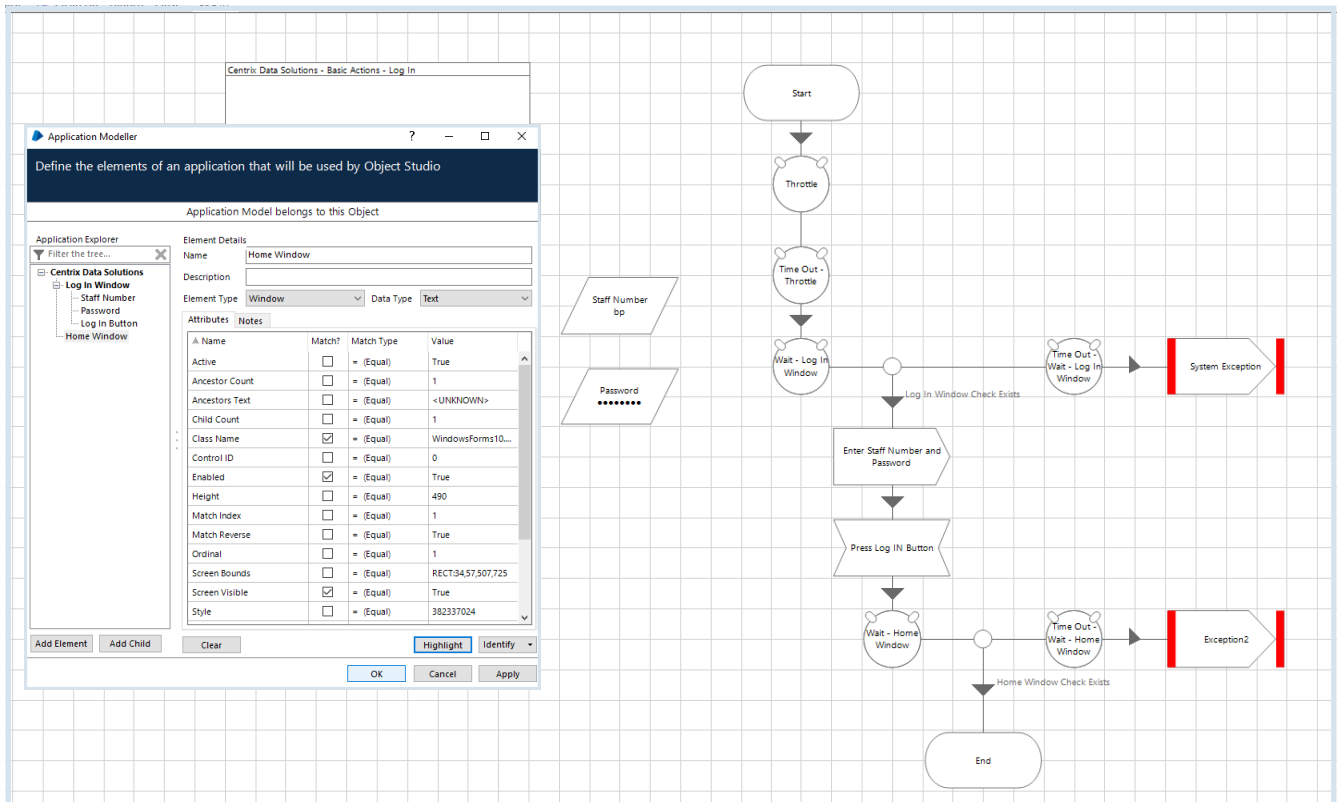
- Uncheck *Window Text* from the *Match* column.
- Click *Highlight* to ensure Application Modeller can find the Element.
- Application Modeller should now recognize the *Staff Number Element*, regardless of whether the Element contains a value. Press *OK* to close Application Modeller.
- Open the Write Stage properties and add a second Action to input the value stored within the *Password* Data Item, into the *Password* input field in the *Log In* window of the application.
- Reset and run the *Log In* Action Page to ensure that both the *Staff Number* and *Password* fields are populated in the *Log In* window of the application.



In this activity, you will identify the *Log In* button in the *Log In* window of the application. You will then add a Navigate Stage to the *Log In* Action Page, to press the *Log In* button. Finally, you will add a Wait Stage to allow the application some time to open and check that the application *Home* window is active and on screen.

Identify a button within an application window and configure an Action to press it.

- For this activity, you'll be working on the *Log In* Action Page of the *Centrix Data Solutions – Basic Actions* Business Object.
- The *Centrix Data Solutions* application should be launched and the *StaffNumber* and *Password* input fields should be populated.
- Create a new Element under the *Log In* window branch of the Element tree, use Spy Mode to capture the *Log In* button of the application and check that it is uniquely identified. Click *OK* to close Application Modeller.
- Add a Navigate Stage to the *Log In* Action Page after the existing Write Action Stage and configure the Navigate Stage to press the *Log In* button, by selecting *Press* from the Action drop-down menu.
- Link all the Stages together.
- Reset and run the *Log In* Action Page, to log in to the Application.
- Once the application *Home* window has appeared, use Application Modeller to identify the *Home* window as a new Element and check that it is uniquely identified.
- After the new Navigate Stage, add a Wait Stage with a condition to check whether the *Home* window is open and on screen.
- Then add an Exception Stage to the right of the Timeout and link all of the Stages together.
- Close the application *Home* window.
- Save and reset the *Log In* Action Page.
- Launch the *Centrix Data Solutions* application.
- Run the *Log In* Action Page.



SECTION 6 ACTIVITY 9a

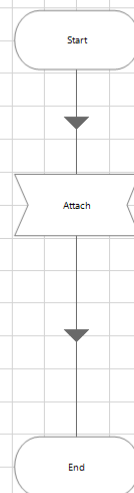
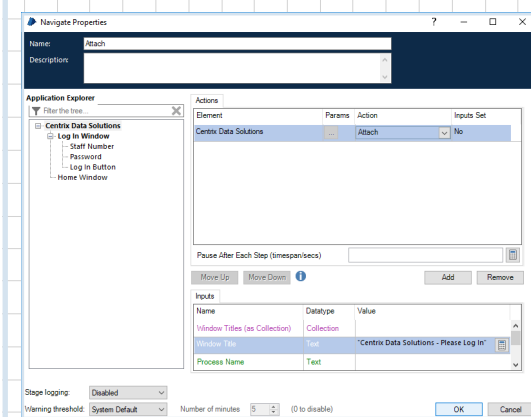
Video 6.10

In this activity, you will Detach a Business Object from an open application. Then you will create a new Action Page, with a Navigate Stage which will Attach to an open application window, using the application Window Title Attribute to uniquely identify the window. Finally, you will use the windows Process Name within Windows Task Manager, to Attach to the open application window.

Attach to an application window.

- For this activity, you'll be working in the *Centrix Data Solutions – Basic Actions* Business Object.
- Launch the *Centrix Data Solutions* application so that it is running and open on the screen, click *Reset*, then *Detach* to disconnect it from the Business Object.
- Reset and run the *Log In* Action Page.
- The error window is informing you that Blue Prism is not connected to the application, so the *Log In* Action Page cannot perform its task. Create a new Action Page called *Attach*.
- Add a Navigate Stage that is configured to *Attach* to the *Centrix Data Solutions* application.

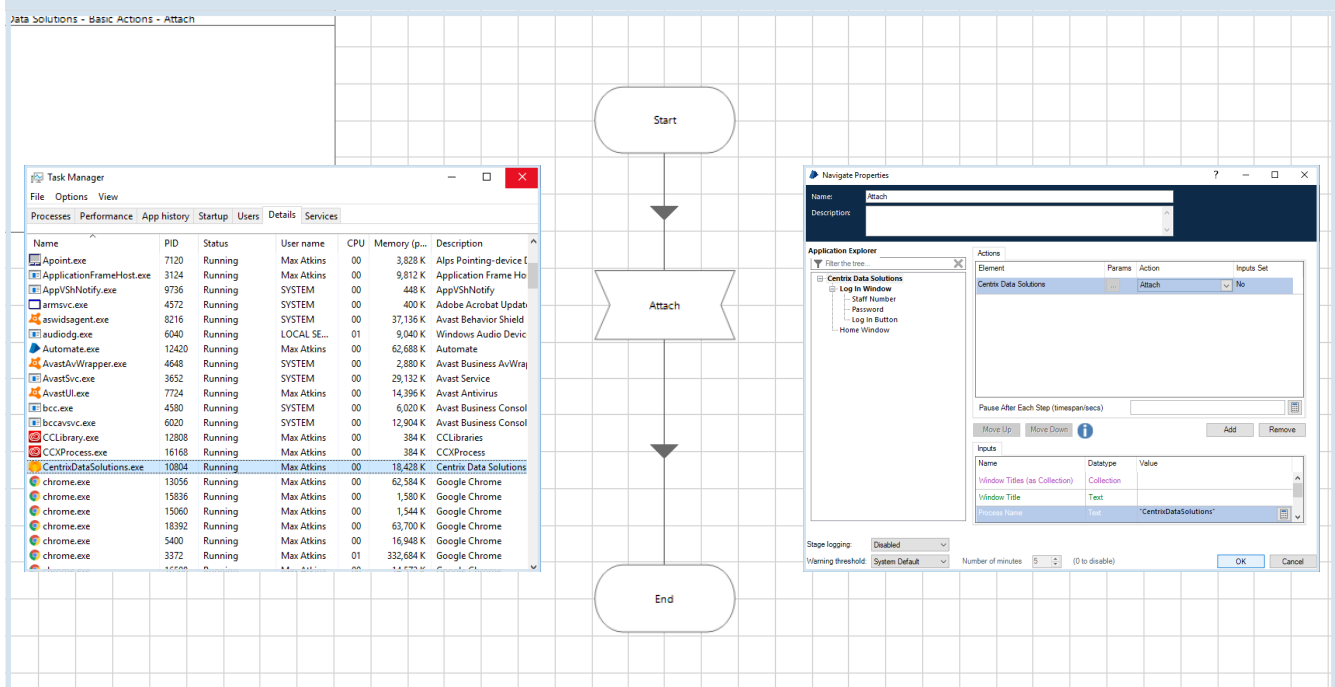
- Use the Window Title Input to indicate which window on the desktop belongs to the *Centrix Data Solutions* application – in this case, you will set the Window Title Input to “*Centrix Data Solutions – Please Log In*”.
- Link all the Stages together.
- Reset and run the *Attach* Action Page.
- Then reset and run the *Log In* Action Page.



There is a second method of Attaching to an open application using the Windows Process Name, which is identified using Windows Task Manager. This method can be useful when you are unsure of the name of the open application window you need to attach to. But is also less susceptible to errors caused by a change in state. As while the Window Title could change with a software update, the Process Name is very unlikely to change.

Use Windows Task Manager to identify the Process Name of an open application window.

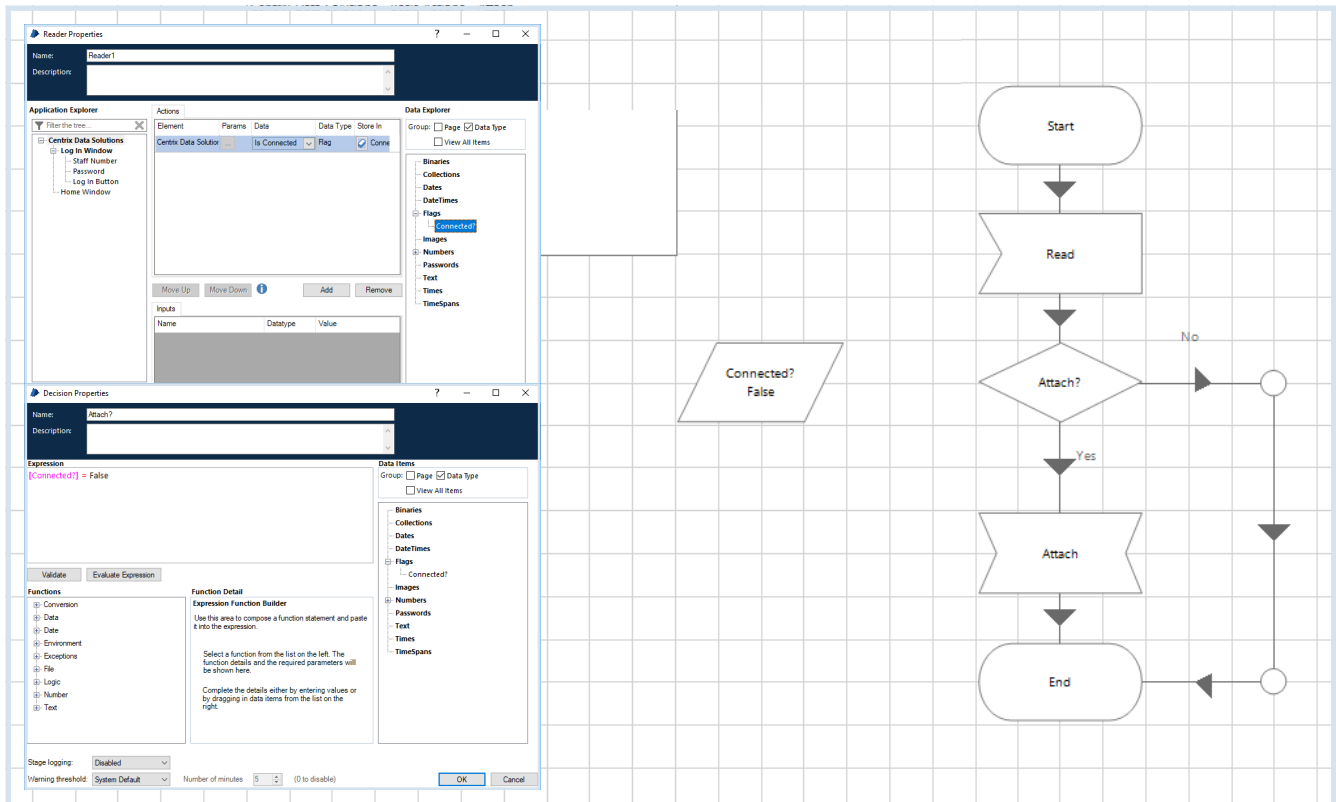
- Close the *Centrix Data Solutions* application, then reset the *Log In* Action Page and *Launch* the application again.
- Click *Ctrl+Shift+Esc* to open Windows Task Manager.
- Look at the list of applications in the Processes tab of the Task Manager window and locate *Centrix Data Solutions*.
- *Right-click* on the application name and select the *Go to Details* option.
- Task Manager will move you to the Details tab and highlight the windows Process Name for the *Centrix Data Solutions* application.
- In the *Attach* Action Page, open the Attach properties and remove the Window Title input value.
- Enter "*CentrixDataSolutions*" for the Process Name input value - you don't need to include the suffix *.exe*.
- Experiment with running the *Launch* and *Attach* Action Pages with the application in different states, to see when these Actions can and can't be used.



A Read Stage is used to read data from Elements within an application and then store this data within a Data Item. In this activity, you will use a Read Stage and a Decision Stage in the Attach Action, to determine whether the application is already attached and whether an Attach is necessary.

Configure the logic to determine whether an Attach is necessary.

- For this activity, you'll be working on the *Attach* Action Page of the *Centrix Data Solutions – Basic Actions* Business Object.
- Launch the *Centrix Data Solutions* application, if it is not already open.
- If you were to run the *Attach* Action Page, you would encounter an 'already connected' error message window.
- Add a Data Item to the *Attach* Action Diagram with a *Flag* Data Type and initial value of *False*. Name it *Is Connected?*
- Add a Read Stage before the *Attach* Stage and open the properties window.
- Drag the *Centrix Data Solutions* application Element at the top of the Element tree, into the Element column in the Actions Area.
- Select *Is Connected* from the Data drop-down menu.
- And then drag the Flag *Is Connected?* Data Item into the Store In column.
- Add a Decision Stage between the *Read* Stage and the *Attach* Stage to evaluate the value of the *Flag* Data Item.
- Input the Expression *[Connected? = False]*. If the value of the *Flag* Data Item is *False*, then the flow will need to move through the *Attach* Navigate Stage. If the value of the *Flag* Data Item is *True*, the application is already Attached, therefore the flow will bypass the *Attach* Navigate Stage and flow straight to the End Stage.
- Link all the Stages together.
- Reset and run the *Attach* Action Page.



SECTION 6 ACTIVITY 11

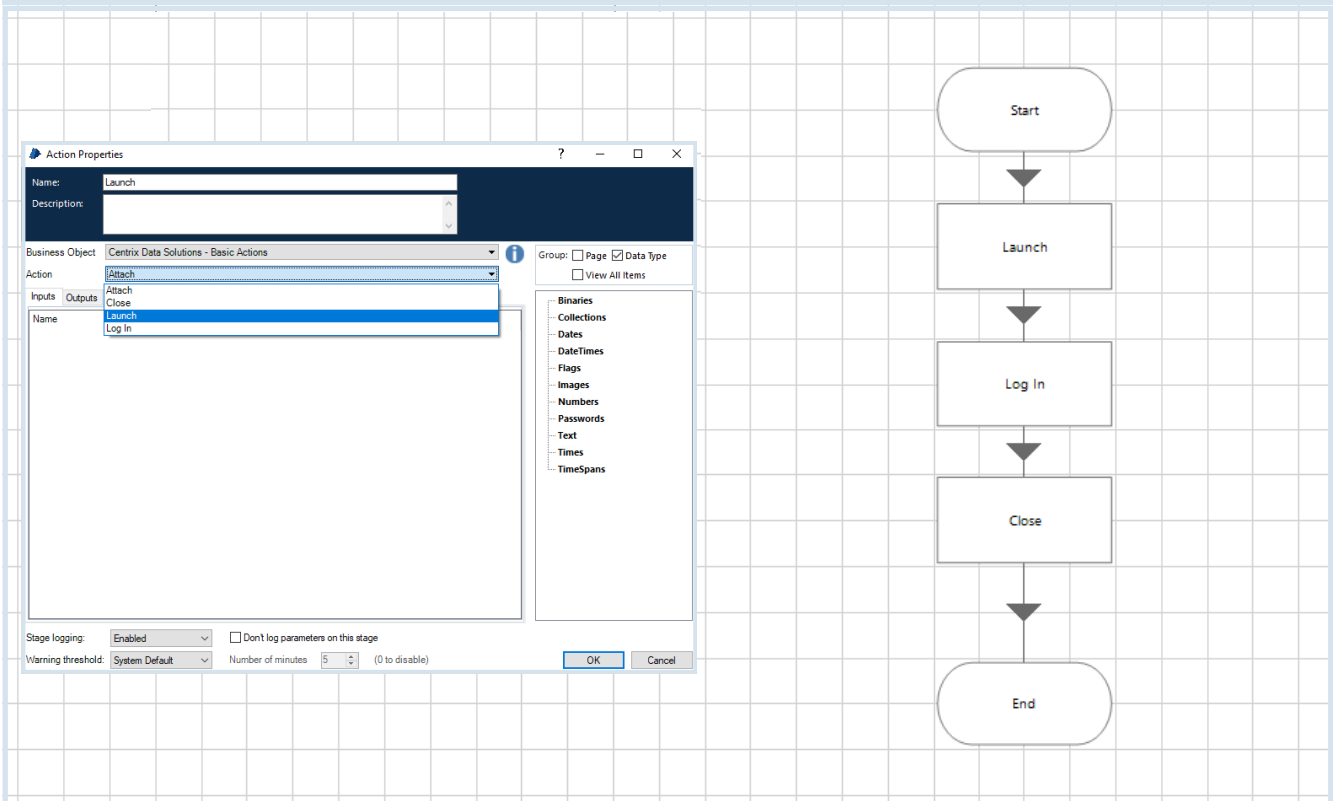
Video 6.12

In this activity, you will create a new Process to test the Actions in the Business Object. You will publish the Action Pages within the Business Object. And then add Action Stages to the new Process to *Launch*, *Log In* and *Close* the application.

Add Action Stages to the Process Diagram to *Launch*, *Log In* and *Close* an application.

- For this activity, you will be working in the Studio area of Blue Prism, in both Process Studio and Object Studio.
- Create a new Process to test the Actions in your new Business Object *Centrix Data Solutions - Test Process*.
- Add an Action Stage and link it to the Start and End Stages.
- Open the Action Stage properties window and select *Centrix Data Solutions - Basic Actions* from the Business Object drop-down menu.
- Notice, that the Action menu is empty and hasn't been populated by the Actions within the Business Object. This is because Actions must be published before they can be used by a Process.
- Save and close *Centrix Data Solutions - Test Process*.

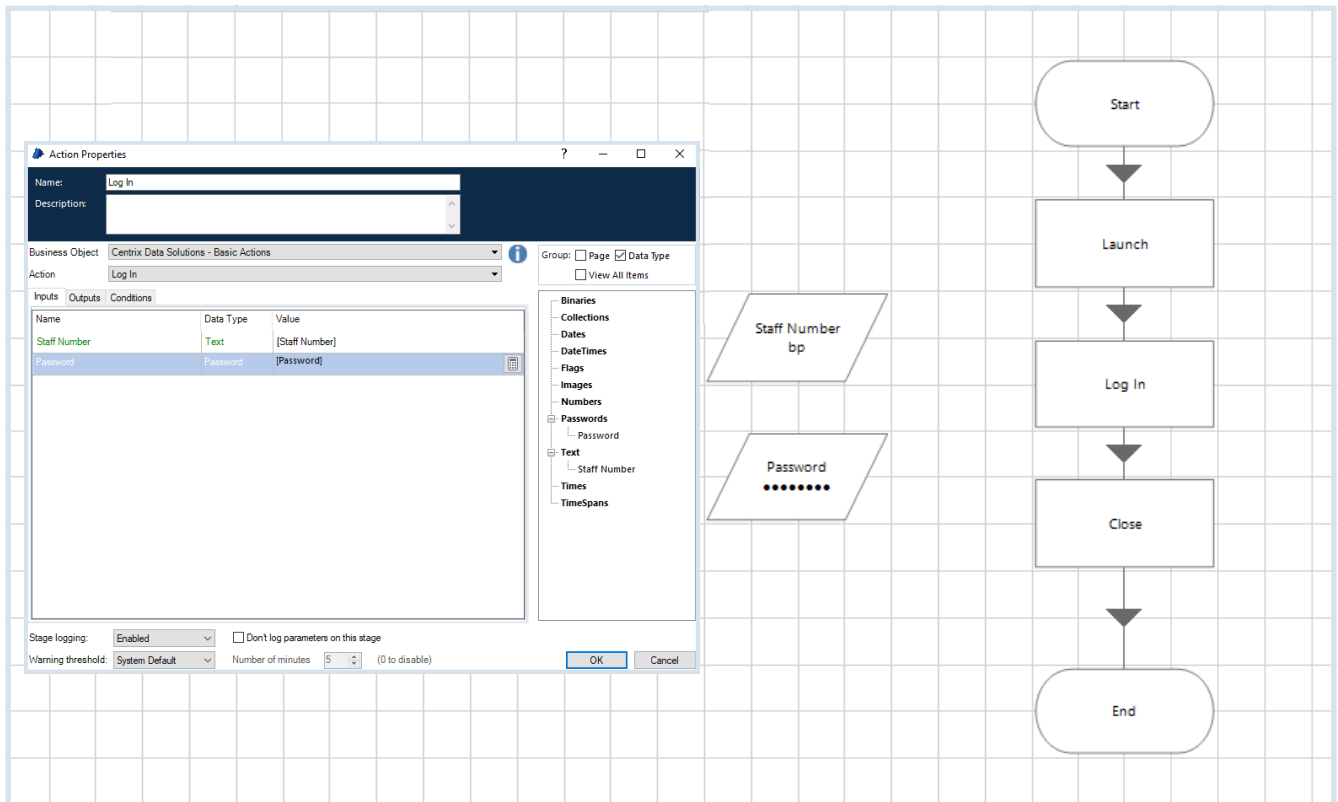
- Reopen the *Centrix Data Solutions – Basic Actions* Business Object.
- Publish all of the Action Pages that you have created by *right-clicking* on the Page tabs and selecting *Publish*.
- Once an Action has been published, the Action icon will be visible next to the Business Object Action name.
- Save and close the *Centrix Data Solutions – Basic Actions* Business Object.
- Reopen the *Centrix Data Solutions - Test Process*.
- Open the *Launch* Action Stage properties. You should now be able to select all of the Action Pages from the Action properties drop-down menu. Select the *Launch* Action.
- Create two further Actions Stages and configure them to use the Actions to *Log In* to and *Close* the *Centrix Data Solutions* application.
- If you need to return to edit an Action for any reason do this by *right-clicking* on the Action Stage and selecting *View action in Object Studio*.
- Link all the Stages together.
- Reset, save and run the *Centrix Data Solutions - Test Process*.
- Publish the *Centrix Data Solutions - Test Process* and run it in Control Room.



In this activity, you will transmit the log in values into the Action via the Start Stage and then set up Input Parameters to pass these values down to the Business Object, so that they can be used to log in to the application.

Set up Input Parameters to transmit values from the Process to the Action.

- For this activity, you will be working in the Studio area of Blue Prism, in both Process Studio and Object Studio.
- Navigate to the *Log In* Action Page of the *Centrix Data Solutions – Basic Actions* Business Object.
- Add *Staff Number* and *Password* Input Parameters to the Start Stage of the *Log In* Action Page. Map the Input Parameters to the existing Data Items of the same names.
- Remove the Initial Values from the *Staff Number* and *Password* Data Items.
- Click *Save* and open the Process *Centrix Data Solutions - Test Process*.
- Add two Data Items to the Process Diagram to hold the *Staff Number* - with Initial Value *bp* and *Password* value with Initial Value *password*.
- Open the properties for the *Log In* Action Stage.
- Drag the appropriate Data Items into the corresponding Input rows.
- Reset, save and run the *Centrix Data Solutions - Test Process* to see the *Staff Number* and *Password* values transmit down into the *Centrix Data Solutions - Basic Actions* Business Object, to be used to log in to the application.



SECTION 6 ACTIVITY 13

Video 6.14

You have already created a Business Object with the ability to *Launch*, *Log In* to and *Close* an application. In this activity, you'll create a supplementary Business Object with the purpose of order processing. You will then create the Actions to *Attach* and *Detach* from the *Orders Menu* window. Finally, you will create an Action to select a menu option from the *Orders Menu* window and navigate to the *New Orders* window.

Create a second Business Object for interacting with the *Orders Menu* of application.

- For this activity, you will be working in Object Studio.
- Create a New Business Object named *Centrix Data Solutions – Order Processing*.
- Launch the *Centrix Data Solutions* application.
- Configure a new Application Model for the application.
- Follow the same set up procedure, as the previous Application Model. But this time when you reach the *Indicate what type of application you are using* step, select the second option.

- Enter *Centrix Data Solutions** as the application Window Title. Notice the asterix here, it is used as a 'Wildcard' symbol to help Application Modeller to match the Window Title to the title of the open application window. The first three words will always be there, but the Wildcard stands for any text that may come after.
- Input *Centrix Data Solutions** into the Window Process field. Continue by accepting the default options.
- Close Application Modeller.
- Click *Reset*.
- Click the *Attach* button, to attach to the open application window.
- Use the *Detach* button to detach from the open application window.
- Create an *Attach* Action Page and a *Detach* Action Page.
- Test the two Actions, to make sure they function correctly.
- Construct your Application Model, for the *Orders Menu* window.
- Use your *Attach* Action Page to connect to the application, by resetting and clicking *Go*.
- Manually navigate through the *Centrix Data Solutions* application by typing in the log in values, clicking the *Log In* button and then the *ORDERS* button. This will take you to the *Orders Menu* window.
- Open Application Modeller and click *Identify* to Spy the *Orders Menu* window, the *Options Menu*, the *Options* box and the *Go* button.
- Always review and adjust the Attributes list, to ensure a unique match.
- Use the *Highlight* button to confirm each match.
- Configure an Action Page called *Navigate Orders Menu*, to navigate through the *Orders Menu* window of the *Centrix Data Solutions* application. The Object Diagram for this Action Page should include:

A Throttle;

A Wait Stage, to check the *Orders Menu* is displayed;

A Write Stage, to input one of the valid menu options;

A Navigate Stage, to click the *Go* button;

A Data Item, to provide the Write Stage with a value for the *Options* menu;

A second Wait Stage, to check for the new window – for this step, you will need to Spy the *New Orders* window.

- After testing that your *Navigate Orders Menu* Action Page functions correctly with the Data Item value, remove this and set up an Input Parameter for your Action.

